More than 30 years of innovative lighting solutions for architecture. Whether office, retail or gallery, solutions made by Seeger are project-specific and creative. Directing attention, creating comfortable atmosphere, motivation and guidance; we develop holistic lighting solutions for your project – Seeger technical lights, Germany, www.seeger-licht.de

This catalogue

This catalogue only has LED luminaires. Why? We believe the time has come for LED and that almost any lighting task can be solved with LED. We've decided to lay the foundations for the future, and what we began many years ago as pioneers now forms our concept: focusing entirely on the continual development and expansion of our LED luminaire portfolio. Continuous development in close cooperation with architects and lighting designers enables us to implement your lighting concept precisely thightly focussed.
In this way we can respond quick an flexible to progresses in LED-technologies, and continue to offer state-of-the-art luminaires for all requirements in the future as well.

Imprint

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(Local first-instance court)
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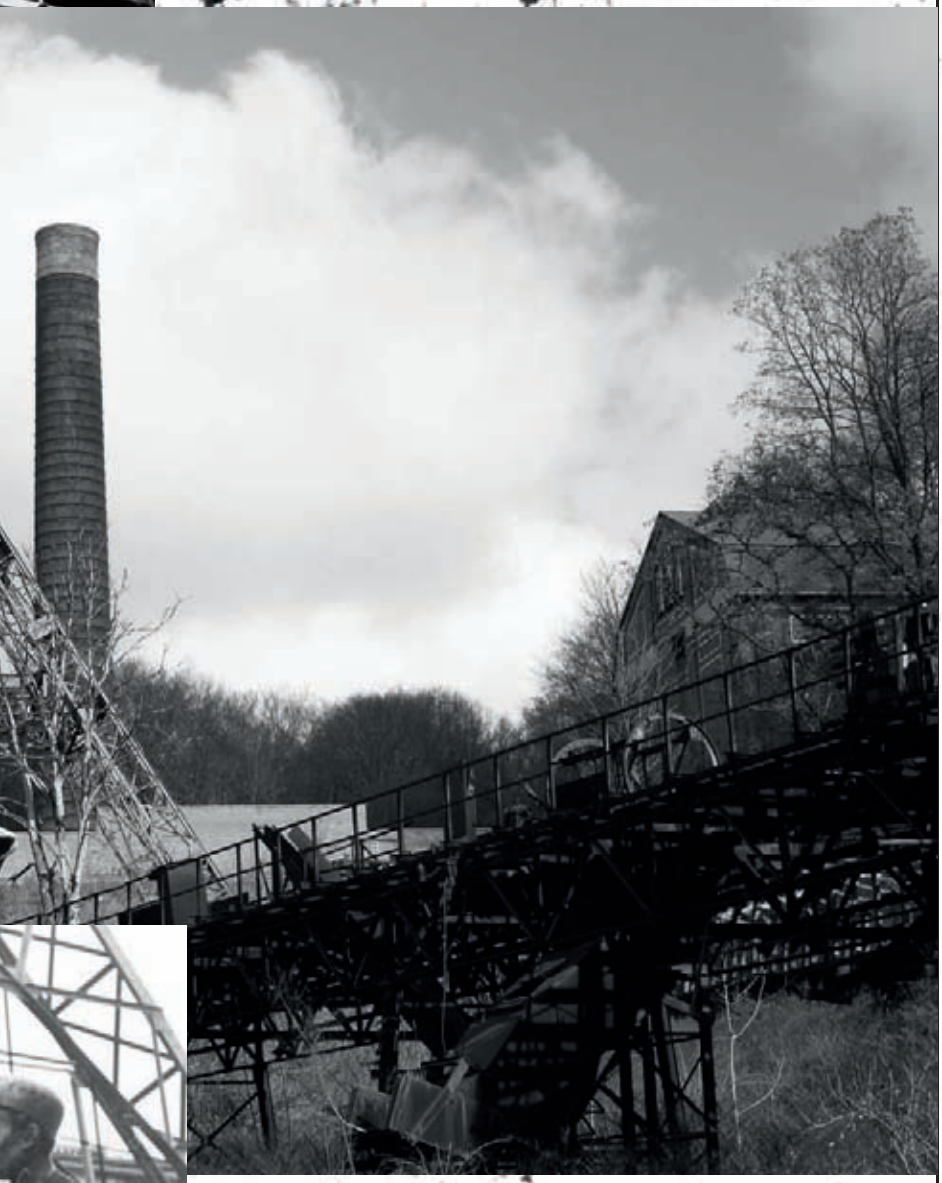
Contents

FOUNDATION

As a family-managed company we are strongly committed to our roots and therefore also to the location of Dortmund in Germany.

The values and virtues of the Ruhr Region are reflected in our corporate philosophy. Hard work, a sense of duty and a healthy sense of self-confidence based on performance as well as the courage to change has always characterised the region and its people. Such people are our capital and their commitment is also a guarantee of quality and care.

Bundesarchiv, Bild 183-09843-0001
Foto: Petzold / 3. März 1951



1984

Foundation of the company „Seeger Licht- und Leuchten" wholesale business in Dortmund, Germany as a specialist wholesale dealer with lighting design.

1992

Rebranded to „Seeger technische Leuchten". Manufacturing location moves to Ringofenstraße, Dortmund-Aplerbeck. Production and development with 1500 m^2.

2000-2007

Warehouse and production space expanded of 3000 m^2.

2006

Name changed to „Seeger technische Leuchten e. K."

2008

Launching of LED technology. Development and construction of LED-based luminaires.

2015

Relocation to new office and production building in Hildebrandstraße, Dortmund. New ergonomic and ESD-protected production line. Expansion of development- and control department.

Individual characters,

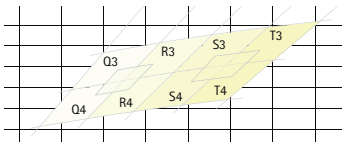
common solutions

LED fundaments
Measurability and effect of colour temperatures

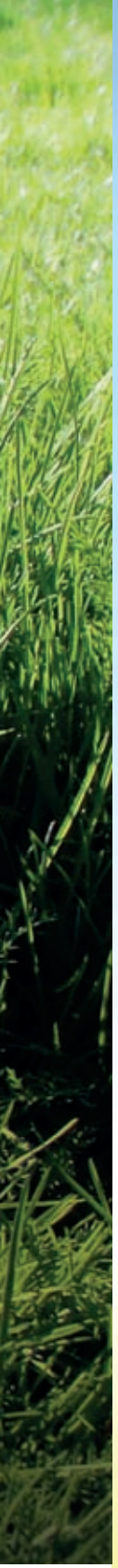
Light source	Colour temperature
Cloudless sky	8000 - 12000 K
Overcast sky	6500 - 7500 K
Fluorescent tube	3000 - 8000 K
Sunlight	5500 - 5800 K
LED	2500 - 5600 K
Discharge lamp	2000 - 6000 K
Incandescent lamp	2200 - 3000 K
Halogen lamp	3000 K
Candle	1500 K

Order code		colour temp
56	Daylight white	5600 K
40	Neutral white	4000 K
30	Warm white	3000 K
27	Comfort white	2700 K

Possible binnings for warm white LEDs



The LED-arrays used are hi-tech products. The production process is complex and highly sensitive. Manufacturing differences caused by the smallest deviations in the parameters are unavoidable. To compensate for this, the LEDs are sorted and categorised according to their colour values and light output ratios. During the individual testing, LEDs of the same category fall into the bins provided and are therefore called "binnings". The narrower the tolerances are set, the higher the quality of the multiple-LED arrays. Our additional, in-house inspection, selection and full documentation keeps any colour deviations down to a negligible minimum.



Colour rendition

The provision of natural colour rendition is an important aspect of good lighting and an important quality characteristic of light. Artificial light should ensure the truest colour rendition possible. This is measured using the colour rendition properties. The Colour Rendering Index (CRI) is used for characterisation. The larger the colour rendering index, CRI or Ra value, the more natural the colours that are reproduced. A light source with Ra = 100 will optimally show all colours.

Colour temperature

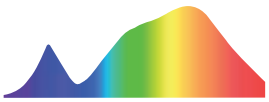
The colour of light from a lamp is described by the colour temperature in Kelvin (K). Sunlight does not have a constant colour temperature. Its colour changes depending on the latitude, time of day and time of year. By using different colour temperatures, it is possible to influence the ambiance and the feeling of wellbeing. This makes it possible, right from the design stage, to specify whether areas or objects have a warm or cool appearance, allowing rest areas and work areas to be defined in advance.

Sunlight **RA = 100**

With light sources that have a complete colour spectrum, the colours of illuminated objects will appear natural; all colours will be perfectly rendered.

Halogen lamp **RA = 90–100**

When it comes to evaluating the colour rendition of artificial light, the halogen lamp performs best.



LED **RA = 84–97**

The LEDs that we use have excellent colour rendition properties and a continuous spectrum.

T5 **RA = 70–90**

Fluorescent lamps have a discontinuous linear spectrum and, therefore, not all colours can be correctly rendered.

LED fundamentals
Measurability and effect of colour temperature

LED technology

Our LED technology offers the perfect combination of powerful LEDs, optimised heat dissipation, effective optics and high end drivers. LED source selection is based on two parameters:
- Light emission
- LEDs CRI >84

Therefore our R&D department employs leading LED technologies such as LED-arrays in COB-Technology. One of our daily research objectives is to ensure that our customers have not only the best sources of light but also enjoy maximised visual comfort and energy savings.

CRI

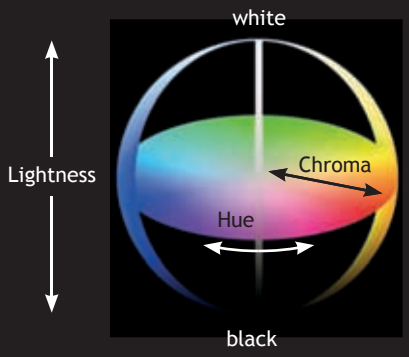
The only internationally valid evaluation of colour rendering is the colour rendering index (CRI) Ra. In this method, the lamp is compared to 15 test colours with corresponding reference colours, with the same temprature and location on the BBL (black body line). The average values of the first eight reference colours are used to derive the colour rendering index Ra (CRI).

GAI

GAI (Gamut Area Index) is another method of evaluating the vividness of colours from LED light sources. The advantage is, that the test light source can be better than the reference light source. The colour points of all 15 test colours under the reference light source are bundled together in CIE 1976 and compared with the test light source.

GAI is a measurement of hue saturation / chroma provided by the illumination. Typically the higher the GAI number the better - dependent upon scale. CRI only measures colour consistency, GAI measures the strength of dominance of a colour. GAI is a more accurate representation of how a person will perceive colour.

The LEDs used by us are engineered at the optimal GAI and CRI combination based on human perception of light.



Key colour definitions

Chroma (saturation) - Strength or domination of the hue. Outer edges are intensely saturated, moving towards centres yield less saturation.

Hue - Colour (red, green, blue etc.)

Lightness - Overall intensity of how light or dark the colour is.

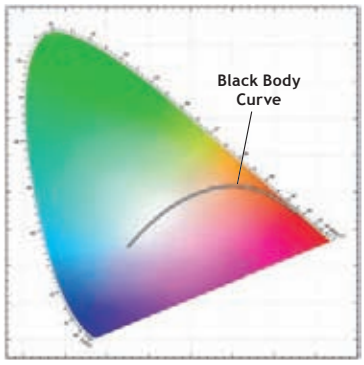
Test colours according to DIN 6169

R1 R2 R3 R4 R5 R6 R7

Planck's law

A 'black body' is an object which does not reflect any incident radiation. The radiation leaving such a body is due solely to its temperature. At a low temperature a black body will only radiate heat. Only if the temperature is continuously raised, the spectrum of the emitted radition will slowly shift into the visible range. As the temperature continues to rise, the red glowing body will turn into a white glowing body. These emissions are made of different wavelengths and are considered to be 'colour neutral'. The CIE colour space describes this radiation as 'Planck black body radiation'.

CIE-Colour spectrum



Retail LED

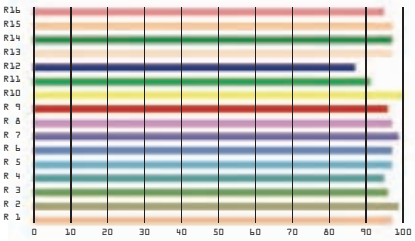
Our Retail LED is a light source which white point is on this curve, i.e. is colour neutral and has vibrant white and glowing colours. With a CRI > 84 and a GAI of 60, Retail LED boast maximised efficiency and are therefore suitable for long operating hours as required in retail applications and shop windows. This vibrant light can generate positive sales effects in a department store and the light is perceived as being pleasant. An RPI study (Rensselaer Polytechnic Institute) confirms this: "A number of studies have been published which provide justification for white light. This is not only based on individual preferences but also on physiological perception of brightness. Irrespective of the fact that the new technology has immense cost advantages, people prefer white light in their environment.".

The visual sensitivity is a wellbeing factor and relates to many human preferences. Special application requires special colour spectrums. We cover these special applications with our CRI > 90-LEDs. With their slightly reddish light, these spots create optimised levels of contrast in the red range, i.e. for skin hues and is considered flattering. By modifying the luminescent material we can adjust the light quality (albeit with up to 20 % reduced energy efficiency compared with the CRI 80-LED) to have better R9 and R15 values making it perfect for the specific requirements such as cosmetic and food areas in department stores.

Gallery LED

One example of how artificial lighting has developed far beyond the previously available light spectrum, is our new Gallery LED. Also located on the Black Body Curve, these LEDs deliver almost full spectrum light, similar to that of natural sunlight. With a CRI > 97 and GAI 80 along with a 2-step MacAdam ellipse, this new technology, in contrast to all other LED light sources, enables optimised lighting for even the most sensitive museum sectors.

Colour rendering of the Gallery-LED



Our new Gallery LED spots allow differentiated and subtle colour nuances to be created for the first time – but without the levels of UV radiation (which can be damaging to sensitive works of art) previously present when generating even approximately similar light qualities. Gallery LEDs, which only suffer a minor reduction in lighting system efficiency (compared with CRI 90-LED efficiency is approx. 23 % reduced), meaning we are finally able to deliver perfect museum illumination using LED technology.

Retail- and Gallery-LEDs in comparison

	CRI	GAI	R_a	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16
	>84	60	82	80	88	95	80	79	84	84	63	15	72	77	66	81	97	75	74
	>91	60	92	92	93	91	92	91	89	94	88	70	82	90	71	92	94	92	92
	>97	80	97	97	99	96	95	97	97	99	97	96	100	91	87	97	97	97	95

R8 R9 R10 R11 R12 R13 R14

Wallwashers are especially suitable for the uniform illumination of paintings. These must be installed and aligned to prevent any form of glare for observers.

Spotlights and downlights are recommended for exhibits such as sculptures, highlighting three-dimensional effects of the objects and emphasising their textures with targeted light.

Gallery

Inspiration, education and entertainment – the demands placed on museums, galleries and exhibitions can be highly diverse. Carefully designed lighting concepts are indispensable for transforming visits into pure enjoyment. Highly different methods of lighting are required for the diverse lighting tasks, ranging from presenting displayed objects to illuminating exhibition spaces and function rooms. The spectrum ranges from uniform general lighting with moderate illuminance levels for orientation in the room to extremely narrow distribution spots with high luminous flux for eye-catching accents.

Compared to conventional lighting technology such as fluorescent lamps, LED light sources provide several advantages for museum lighting. LEDs emit almost no infrared or ultraviolet radiation, thereby dramatically reducing the damage potential from a conservational standpoint. They are also available with outstanding colour rendering (CRI ≥ 95).

True experiences with great visibility
Well-planned exhibition lighting ensures the attractive and fascinating display of art objects. Coherently dramatic staging increases the experience value and also promotes attention, with light literally defining highlights by specifically emphasising selected exhibits.

Disturbing reflections and undesirable shadowing on paintings and objects must be avoided. Of importance in this aspect is setting the luminaire position, the appropriate beam characteristic, suitable luminous flux and accessories such as louvres or baffles if required.

Directly dimmable
The possibility of individually dimming each luminaire provides further flexibility in terms of lighting design. As a consequence, individual scenes can be realised for specific exhibition areas or objects. If the form of presentation is modified or redesigned, illuminance levels can then be simply adapted according to needs. TUBE track-mounted spotlights are dimmed either via DALI driver or directly on the spotlight (direct-dim).


Reflector lens oval
07510.01

Oval distribution of the light


Soft-lens-filter
07510.02

For soft transition from bright to dark areas


Colour filter

07520.01	blue
07520.02	red
07520.03	yellow


Anti-glare-ring

xxxxx.76	asymmetrical
xxxxx.77	symmetrical


Anti-glare-ring
xxxxx.78 cross baffle

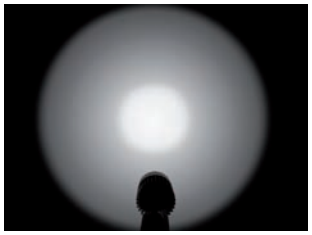

Barn doors
xxxxx.70


Honeycomb

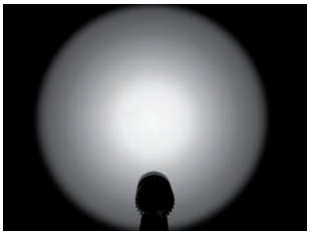
07550.01	Ø 65mm
07550.02	Ø 67mm

▸ Accessories are assigned according to the luminaire article number. For this purpose simply replace the „xxxxx" placeholder with the article number of the luminaire used.

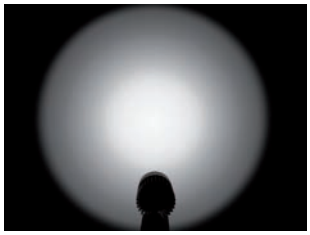
Reflector system



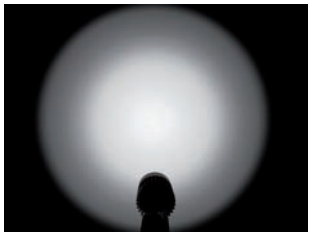
12° Super-Spot



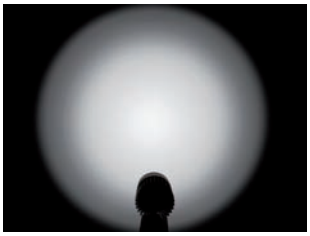
19° Spot



23° Medium



28° Medium wide



37° Flood

60° Super-Flood

Reflector system

The lamps are supplied as standard with a 37° beam angle ('flood') reflector. Five additional reflectors with different beam angles are available as options. These units can be swapped for one another - not only within this lamp series - but reciprocally throughout the entire product family. As a result, the reflector of a track-mounted spotlight can be swapped with one from a recessed spotlight and vice versa.

Reflector options:

XS = Super-Spot
S = Spot
M = Medium
XM = Medium wide
F = Flood
XF = Super-Flood

Swap reflectors
We've listened to you! In response to the ideas and suggestions of our customers, we are pleased to present the results of our recent development efforts - Spots offering not only efficient COB (Chip-On-Board) LED-arrays and effective passive cooling systems but one more special and outstanding feature: **Swap Reflectors.**

Reflectors can be swapped for one another even with the lamp assembled and in place and without the need for tools (Reflector System SuperSpot only with LED, type 13-15, 23-25, 33-35, LES 13).

This means that at any time the directional characteristics of the lamps can be quickly changed and adjusted to meet new situations in product presentation. The costs can be effectively reduced by this changes.

LED Tube 85

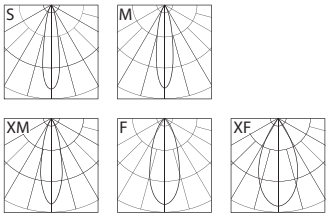
The little brother... a real eye-catcher
The minimised version TUBE 85 11630 is ideal for special areas requiring lower wattages. It is a genuine alternative in the mid-range output segment with up to 2,800 lumens.

LED Track-mounted spotlight

› For general lighting and goods presentation
› Luminaire housing made of aluminium and steel
› Powder-coated surface
› 3-circuit universal adapter

› Pan-and-tilt adjustment; 335°/ 350°
› LED COB-Array, L90/B10 - 50000 hrs.

› Mid Flux	LED-Type 16, 36	17 W
› High Flux	LED-Type 17, 37	23 W
› Ultra Flux	LED-Type 18, 38	33 W

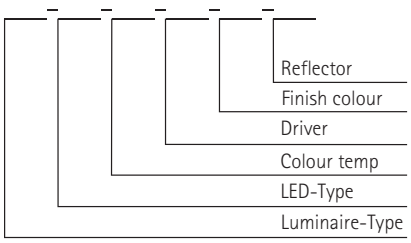


Luminous flux Gallery (CRI > 97)

		2700 K	3000 K
LED-Type	36	1300 lm	1400 lm
LED-Type	37	1780 lm	1910 lm
LED-Type	38	2570 lm	2770 lm

Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	16	1970 lm	2060 lm	2140 lm	2190 lm
LED-Type	17	2700 lm	2810 lm	2920 lm	3000 lm
LED-Type	18	3900 lm	4070 lm	4230 lm	4330 lm



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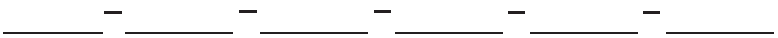
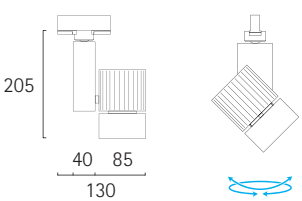




	LED-Type	Colour temp	Driver	Finish colour	Reflector
11620	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K		32 = matt white	F = 37°
					XF = 60°

Technical changes reserved and errors excepted!

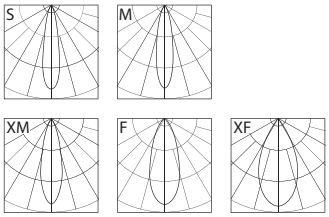
LED Tube 95

LED Track-mounted spotlight

› For general lighting and goods presentation
› Luminaire housing made of aluminium and steel
› Powder-coated surface
› 3-circuit universal adapter

› Pan-and-tilt adjustment; 335°/ 2 X 100°
› LED COB-Array, L90/B10 - 50000 hrs.

› Mid Flux	LED-Type 16, 36	17 W
› High Flux	LED-Type 17, 37	23 W
› Ultra Flux	LED-Type 18, 38	33 W

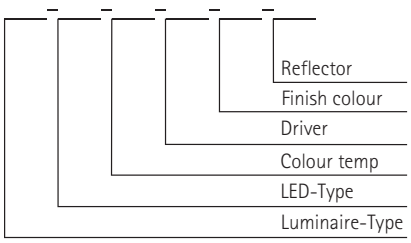


Luminous flux Gallery (CRI > 97)

		2700 K	3000 K
LED-Type	36	1300 lm	1400 lm
LED-Type	37	1780 lm	1910 lm
LED-Type	38	2570 lm	2770 lm

Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	16	1970 lm	2060 lm	2140 lm	2190 lm
LED-Type	17	2700 lm	2810 lm	2920 lm	3000 lm
LED-Type	18	3900 lm	4070 lm	4230 lm	4330 lm



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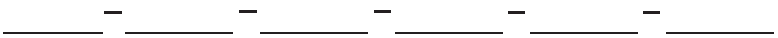


	LED-Type	Colour temp	Driver	Finish colour	Reflector
11800	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K		32 = matt white	F = 37°
					XF = 60°

Technical changes reserved and errors excepted!

LED Tube 95

Track-mounted spotlight
Universally usable luminaire for general lighting and presentiation of goods. Elegant spotlight with a sharp design. Brilliant light due to configuration with LED-arrays in COB (chip-on-board) ceramic technology. Integrated passive cooling system. Pan-and-tilt adjustment. With 3-circuit universal adapter.

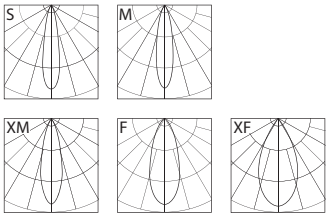
Elegant design
Discreet with high lumen output for areas with restricted space- Reflectors are optimised for goods presentation requirements. Luminaire housing is placed parallel to mounting track, to create a smooth overall image.

LED Track-mounted spotlight

› For general lighting and goods presentation
› Luminaire housing made of aluminium and steel
› Powder-coated surface
› 3-circuit universal adapter

› Pan-and-tilt adjustment; 335°/ 350°
› LED COB-Array, L90/B10 - 50000 hrs.

› Mid Flux	LED-Type 16, 26	17 W
› High Flux	LED-Type 17, 27	23 W
› Ultra Flux	LED-Type 18, 28	33 W

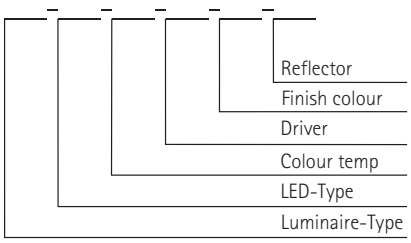


Luminous flux High Performance (CRI > 90)

		2700 K	3000 K	3500 K	4000 K
LED-Type	26	1710 lm	1750 lm	1850 lm	1870 lm
LED-Type	27	2330 lm	2390 lm	2540 lm	2550 lm
LED-Type	28	3370 lm	3460 lm	3670 lm	3690 lm

Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	16	1970 lm	2060 lm	2140 lm	2190 lm
LED-Type	17	2700 lm	2810 lm	2920 lm	3000 lm
LED-Type	18	3900 lm	4070 lm	4230 lm	4330 lm



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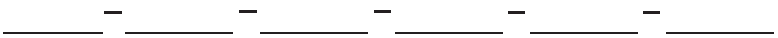

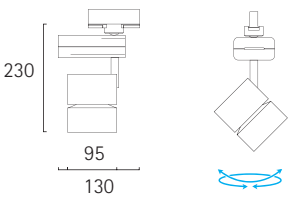

	LED-Type	Colour temp	Driver	Finish colour	Reflector
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	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K		32 = matt white	F = 37°
					XF = 60°

Technical changes reserved and errors excepted!

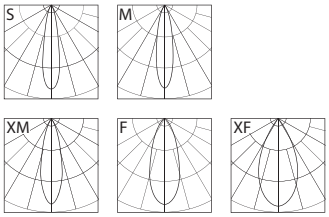
LED Tube 95

LED Track-mounted spotlight

› For general lighting and goods presentation
› Luminaire housing made of aluminium and steel
› Powder-coated surface
› 3-circuit universal adapter

› Pan-and-tilt adjustment; 335°/ 350°
› LED COB-Array, L90/B10 - 50000 hrs.

› Mid Flux	LED-Type 16, 36	17 W
› High Flux	LED-Type 17, 37	23 W
› Ultra Flux	LED-Type 18, 38	33 W

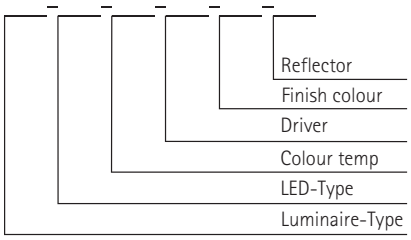


Luminous flux Gallery (CRI > 97)

		2700 K	3000 K
LED-Type	36	1300 lm	1400 lm
LED-Type	37	1780 lm	1910 lm
LED-Type	38	2570 lm	2770 lm

Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	16	1970 lm	2060 lm	2140 lm	2190 lm
LED-Type	17	2700 lm	2810 lm	2920 lm	3000 lm
LED-Type	18	3900 lm	4070 lm	4230 lm	4330 lm



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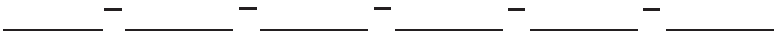
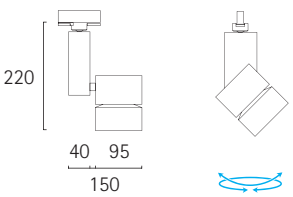
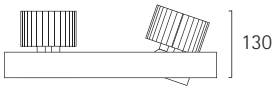




	LED-Type	Colour temp	Driver	Finish colour	Reflector
11830	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K		32 = matt white	F = 37°
					XF = 60°

Technical changes reserved and errors excepted!

LED Pendant cardan

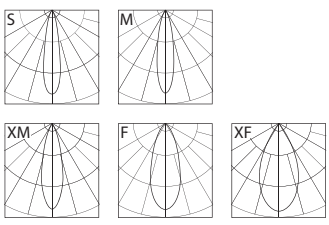


LED Pendant cardan

› Housing frame made of solid aluminium profile
› Powder-coated surface
› Aluminium reflector (Al99.99), high polished
› Passive cooling system

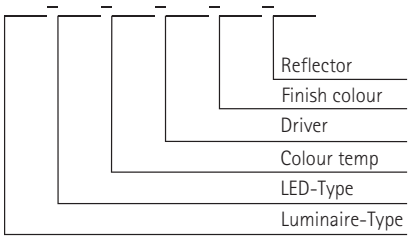
› Luminaire units cardanically tiltable; 30°/ 35°
› LED COB-Array, L90/B10 - 50000 hrs.

› Mid Flux	LED-Type 16	17 W
› High Flux	LED-Type 17	23 W
› Ultra Flux	LED-Type 18	33 W



Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	16	1970 lm	2060 lm	2140 lm	2190 lm
LED-Type	17	2700 lm	2810 lm	2920 lm	3000 lm
LED-Type	18	3900 lm	4070 lm	4230 lm	4330 lm



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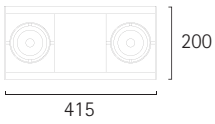
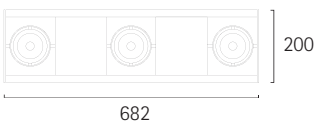
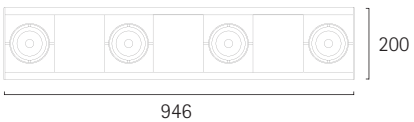
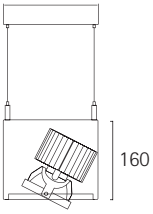






	LED-Type	Colour temp	Driver	Finish colour	Reflector
96162	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K		32 = matt white	F = 37°
					XF = 60°
96163	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K		32 = matt white	F = 37°
					XF = 60°
96164	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K		32 = matt white	F = 37°
					XF = 60°

LED Pendant BOXs

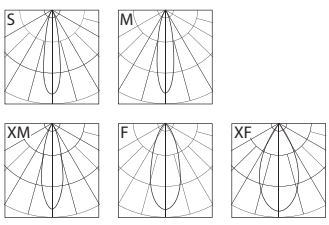


LED Pendant BOXs

› Housing made of of sheet steel
› Surface powder-coated in accordance with RAL
› Aluminium reflector (Al99.99), high polished
› Passive cooling system
› With glare-reducing protective glass

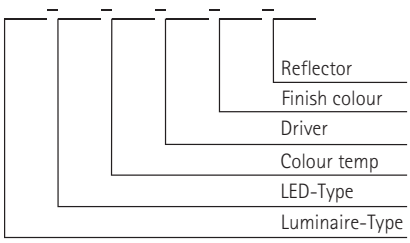
› Luminaire units cardanically tiltable; 22°/ 27°
› LED COB-Array, L90/B10 - 50000 hrs.

› Mid Flux	LED-Type 16	17 W
› High Flux	LED-Type 17	23 W
› Ultra Flux	LED-Type 18	33 W



Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	16	1970 lm	2060 lm	2140 lm	2190 lm
LED-Type	17	2700 lm	2810 lm	2920 lm	3000 lm
LED-Type	18	3900 lm	4070 lm	4230 lm	4330 lm



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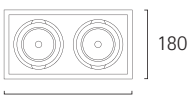
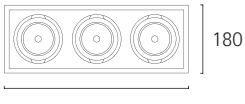




	LED-Type	Colour temp	Driver	Finish colour	Reflector
96220	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K		32 = matt white	F = 37°
					XF = 60°
96222	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K		32 = matt white	F = 37°
					XF = 60°
96223	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K		32 = matt white	F = 37°
					XF = 60°


Special buildings and rooms
require individual lighting solutions
– we display architecture in the right light.


Unsere Story
WHITE STUFF

Light arouses emotions

Transforming shopping into experiences, shops into impressive enviroments regarding presentation and lighting as a key to success – light in sales areas has many functions. Light creates atmosphere, attracts attention, emphasises the quality of goods and aids orientation. Whether the fruit area of a supermarket, fashion outlets in a pedestrian zone or a cosmetics store in a shopping mall, correctly specified light distribution characteristics and spectra allow display areas to appear more three-dimensional, give intensity to colours and make goods more appealing. This arouses positive emotions with customers that promotes the desire to purchase and have positive results in terms of turnover. If the atmosphere creates a sense of well-being, customers connect this directly to their shopping experience and the individual appearance of the shop remains a pleasant and lasting memory – identification via light is a central factor for customer loyalty.

We only see in light

Our eyes constantly scan a room to automatically locate the brightest point. As such, light guides our attention and creates hierarchies in our perception. It accentuates and moves nonrelevant objects to the background.

Each person only has a specific quantity of attention available to them. It‘s like a headlight in the night – only that which is illuminated and which therefore excites our attention is seen and perceived by us.

Light creates harmony

Harmony is not gained through equality, but balanced supplement.

Light in shops ideally displays goods but also creates a unique ambiance and a sense of drama in the space. Adequate general lighting achieves continuity and provides the stage for specific targeted, expressive light accents. A unique overall image is created that is ideal for the respecific store.

Light must also fulfil its essential function in sales spaces – creating good visual conditions. Sufficient illuminance levels for shelving and displays quickly create an overwiew of goods offered, help with specific selections and make product information easily accessible. Glare must be avoided, and high colour rendering gives the goods a natural and authentic appearance. A further challenge in terms of lighting design is the convincing interior design of the sales area. This should structure the area and define clearly recognisable zones to guide customers and their desire to purchase.


dheit & Esoterik
A B
C D
E F
G H
I J
Q P
YOGA
KRANKEN-FLÜSTERER

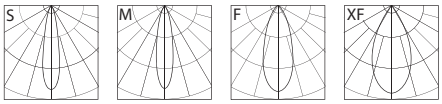
LED Cardan

LED Cardan recessed spotlights

› Luminaire housing made of aluminium and steel
› Powder-coated surface
› Aluminium reflector (Al99.99), high polished
› With glare-reducing protective glass
› Available as single- or multi-luminaire
› Passive cooling system

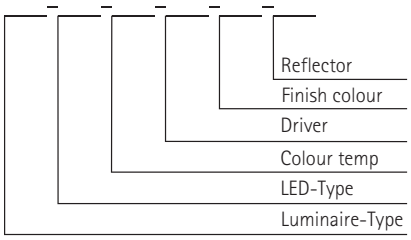
› Luminaire units are cardanically tiltable; 27°/ 30°
› LED COB-Array, L90/B10 - 50000 hrs.

› Small Flux	LED-Type 11	13 W
› Mid Flux	LED-Type 12	17 W



Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	11	1080 lm	1130 lm	1170 lm	1200 lm
LED-Type	12	1480 lm	1450 lm	1600 lm	1640 lm



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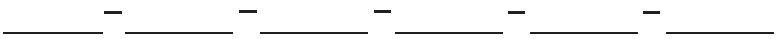
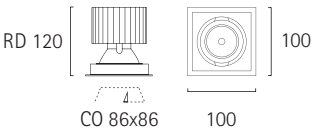
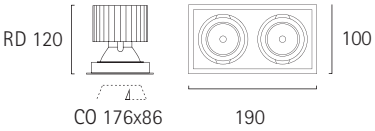






	LED-Type	Colour temp	Driver	Finish colour	Reflector
13200	11	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	12	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	...	35 = 3500 K	10 = DALI	30 = matt black	F = 37°
		40 = 4000 K		32 = matt white	XF = 55°

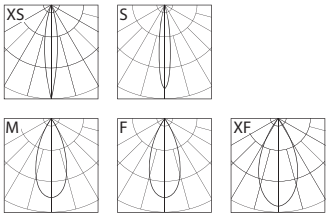
13202	11	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	12	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	...	35 = 3500 K	10 = DALI	30 = matt black	F = 37°
		40 = 4000 K	15 = DMX	32 = matt white	XF = 55°

LED Cardan recessed spotlights

› Luminaire housing made of aluminium and steel
› Powder-coated surface
› Aluminium reflector (Al99.99), high polished
› With glare-reducing protective glass
› Available as single- or multi-luminaire
› Passive cooling system

› Luminaire units are cardanically tiltable; 30°/ 35°
› LED COB-Array, L90/B10 - 50000 hrs.

› Small Flux	LED-Type 13, 33	14 W
› Mid Flux	LED-Type 14, 34	19 W
› High Flux	LED-Type 15, 35	26 W

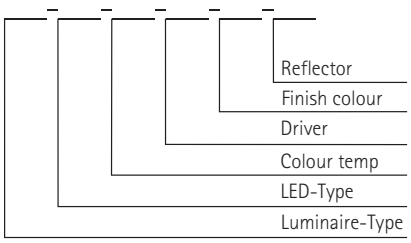


Luminous flux Gallery (CRI > 97)

		2700 K	3000 K
LED-Type	33	920 lm	1000 lm
LED-Type	34	1280 lm	1380 lm
LED-Type	35	1670 lm	1800 lm

Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	13	1410 lm	1460 lm	1520 lm	1560 lm
LED-Type	14	1950 lm	2030 lm	2110 lm	2240 lm
LED-Type	15	2540 lm	2650 lm	2750 lm	2820 lm



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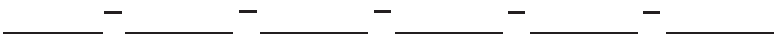
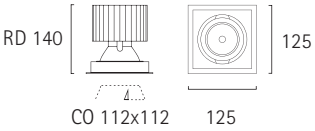
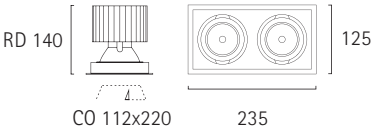
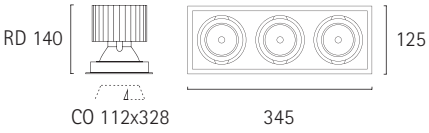








	LED-Type	Colour temp	Driver	Finish colour	Reflector
12200	13	27 = 2700 K	02 = ECG	20 = to RAL	XS = 12°
	14	30 = 3000 K	03 = 1-10V	23 = Luna-silver	S = 19°
	15	35 = 3500 K	10 = DALI	30 = matt black	M = 23°
	...	40 = 4000 K	15 = DMX	32 = matt white	F = 37°
					XF = 55°
12202	13	27 = 2700 K	02 = ECG	20 = to RAL	XS = 12°
	14	30 = 3000 K	03 = 1-10V	23 = Luna-silver	S = 19°
	15	35 = 3500 K	10 = DALI	30 = matt black	M = 23°
	...	40 = 4000 K	15 = DMX	32 = matt white	F = 37°
					XF = 55°
12203	13	27 = 2700 K	02 = ECG	20 = to RAL	XS = 12°
	14	30 = 3000 K	03 = 1-10V	23 = Luna-silver	S = 19°
	15	35 = 3500 K	10 = DALI	30 = matt black	M = 23°
	...	40 = 4000 K	15 = DMX	32 = matt white	F = 37°
					XF = 55°

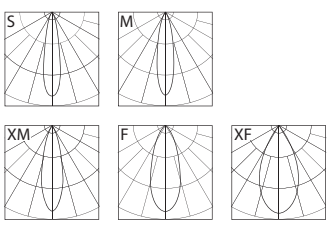
LED Cardan

LED Cardan recessed spotlights

› Luminaire housing made of aluminium and steel
› Powder-coated surface
› Reflector can be replaced without tools
› Aluminium reflector (Al99.99), high polished
› With glare-reducing protective glass
› Passive cooling system

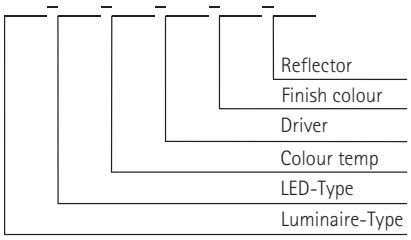
› Luminaire units are cardanically tiltable; 25°/ 35°
› LED COB-Array, L90/B10 - 50000 hrs.

› Mid Flux	LED-Type 16	17 W
› High Flux	LED-Type 17	23 W
› Ultra Flux	LED-Type 18	33 W



Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	16	1970 lm	2060 lm	2140 lm	2190 lm
LED-Type	17	2700 lm	2810 lm	2920 lm	3000 lm
LED-Type	18	3900 lm	4070 lm	4230 lm	4330 lm



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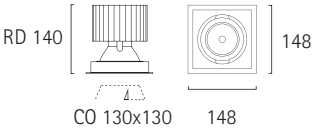
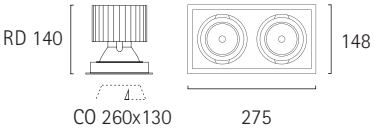
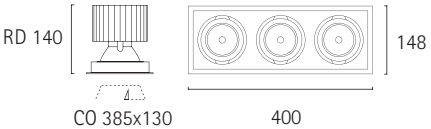


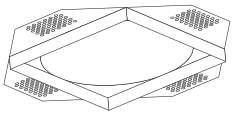




	LED-Type	Colour temp	Driver	Finish colour	Reflector
12240	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K	15 = DMX	32 = matt white	F = 37°
					XF = 60°
12242	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K	15 = DMX	32 = matt white	F = 37°
					XF = 60°
12243	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K	15 = DMX	32 = matt white	F = 37°
					XF = 60°

Technical changes reserved and errors excepted!

LED Cardan trimless



Square trimless downlights
Plastered-in installation using separate mounting frame. Options available for flush installation or recessed installation. The narrow, all-round reflector edge forms the visible border of the luminaire.

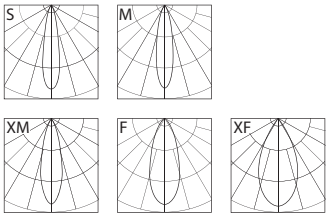
Also available as 2- and 3-luminaire.

LED Cardan recessed spotlight

› Luminaire housing made of aluminium and steel
› Powder-coated surface
› Aluminium reflector (Al99.99), high polished
› With glare-reducing protective glass
› Available as single- or multi-luminaire
› Passive cooling system

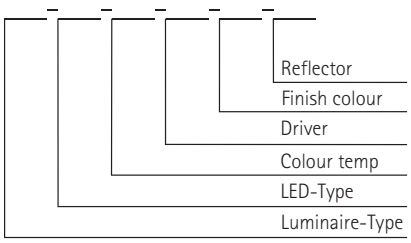
› Luminaire units are cardanically tiltable; 28°/ 35°
› LED COB-Array, L90/B10 - 50000 hrs.

› Small Flux	LED-Type 16	17 W	LED-Type 13	14 W
› Mid Flux	LED-Type 17	23 W	LED-Type 14	19 W
› High Flux	LED-Type 18	33 W	LED-Type 15	26 W



Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	13	1410 lm	1460 lm	1520 lm	1560 lm
LED-Type	14	1950 lm	2030 lm	2110 lm	2240 lm
LED-Type	15	2540 lm	2650 lm	2750 lm	2820 lm
LED-Type	16	1970 lm	2060 lm	2140 lm	2190 lm
LED-Type	17	2700 lm	2810 lm	2920 lm	3000 lm
LED-Type	18	3900 lm	4070 lm	4230 lm	4330 lm



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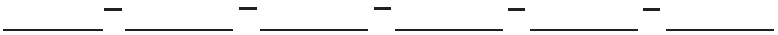
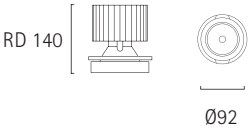
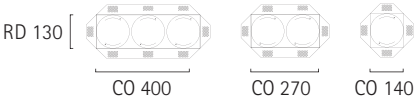




Trimless



	LED-Type	Colour temp	Driver	Finish colour	Reflector
12290	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K		32 = matt white	F = 37°
					XF = 60°

12291	98	plastering frame 1-flame
12292	98	plastering frame 2-flame
12293	98	plastering frame 3-flame
	...	

Technical changes reserved and errors excepted!

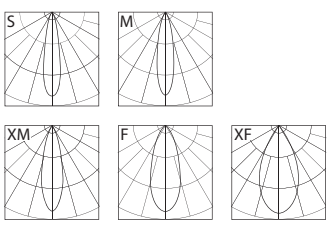
LED Cardan

LED Cardan recessed spotlights

› Luminaire housing of aluminium and steel
› Powder-coated surface
› Reflector can be replaced without tools
› Aluminium reflector (Al99.99), high polished
› With glare-reducing protective glass
› Available as single- or multi-luminaire
› Passive cooling system

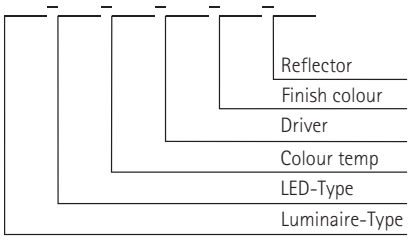
› Luminaire units are cardanically tiltable; 30°/ 35 °
› LED COB-Array, L90/B10 - 50000 hrs.

› Mid Flux	LED-Type 16	17 W
› High Flux	LED-Type 17	23 W
› Ultra Flux	LED-Type 18	33 W



Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	16	1970 lm	2060 lm	2140 lm	2190 lm
LED-Type	17	2700 lm	2810 lm	2920 lm	3000 lm
LED-Type	18	3900 lm	4070 lm	4230 lm	4330 lm



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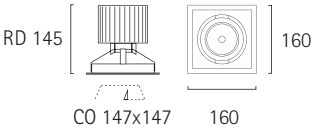
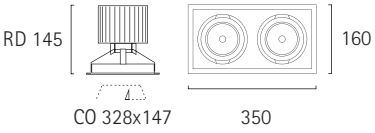
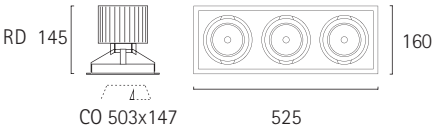






	LED-Type	Colour temp	Driver	Finish colour	Reflector
12380	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K	15 = DMX	32 = matt white	F = 37°
					XF = 60°
12382	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K	15 = DMX	32 = matt white	F = 37°
					XF = 60°
12383	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K	15 = DMX	32 = matt white	F = 37°
					XF = 60°

Technical changes reserved and errors excepted!

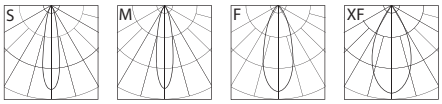
LED Cardan

LED Cardan recessed spotlight

› Luminaire housing made of aluminium and steel
› Powder-coated surface
› Aluminium reflector (Al99.99), high polished
› With glare-reducing protective glass
› Passive cooling system

› Luminaire units are cardanically tiltable; 27°/ 30°
› LED COB-Array, L90/B10 - 50000 hrs.

› Small Flux	LED-Type 11, 31	13 W
› Mid Flux	LED-Type 12, 32	17 W

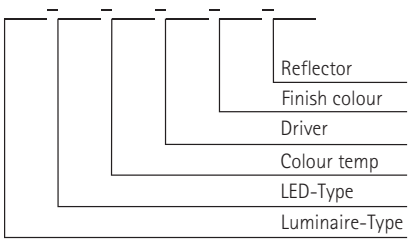


Luminous flux Gallery (CRI > 97)

		2700 K	3000 K
LED-Type	31	710 lm	770 lm
LED-Type	32	970 lm	1050 lm

Luminous flux Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	11	1080 lm	1130 lm	1170 lm	1200 lm
LED-Type	12	1480 lm	1450 lm	1600 lm	1640 lm



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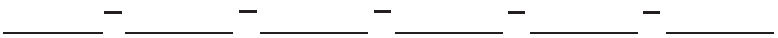
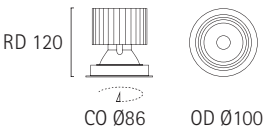




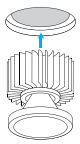
	LED-Type	Colour temp	Driver	Finish colour	Reflector
13250	11	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	12	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	...	35 = 3500 K	10 = DALI	30 = matt black	F = 37°
		40 = 4000 K		32 = matt white	XF = 55°

Technical changes reserved and errors excepted!

Inserting the
plastering frame

Securing and plastering

Painting



Installing the downlight

12360

12370

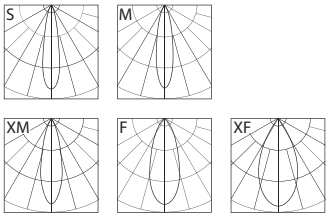
Plastering frame
For firm, concealed installation
in ceiling cut-outs.

LED Cardan recessed spotlight

› Luminaire housing made of aluminium and steel
› Powder-coated surface
› Aluminium reflector (Al99.99), high polished
› With glare-reducing protective glass
› Passive cooling system

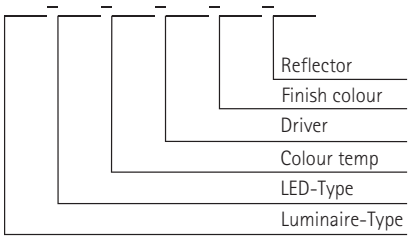
› Luminaire units are cardanically tiltable; 28°/ 35°
› LED COB-Array, L90/B10 - 50000 hrs.

› Mid Flux	LED-Type 16	17 W
› High Flux	LED-Type 17	23 W
› Ultra Flux	LED-Type 18	33 W



Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	16	1970 lm	2060 lm	2140 lm	2190 lm
LED-Type	17	2700 lm	2810 lm	2920 lm	3000 lm
LED-Type	18	3900 lm	4070 lm	4230 lm	4330 lm



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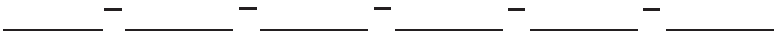
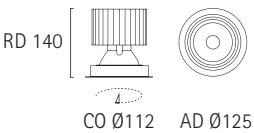
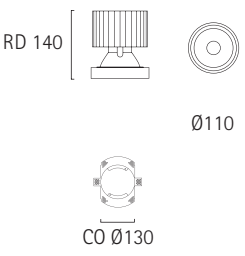






Trimless

	LED-Type	Colour temp	Driver	Finish colour	Reflector
12360	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K	15 = DMX	32 = matt white	F = 37°
					XF = 60°
12370	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K	15 = DMX	32 = matt white	F = 37°
					XF = 60°
12371	98	plastering frame 1-flame			

Technical changes reserved and errors excepted!

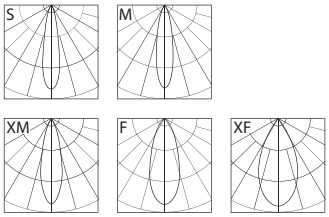
LED Cardan

LED Cardan recessed spotlight

› Luminaire housing made of aluminium and steel
› Powder-coated surface
› Aluminium reflector (Al99.99), high polished
› With glare-reducing protective glass
› Passive cooling system

› Luminaire units are cardanically tiltable; 30°/ 35°
› LED COB-Array, L90/B10 - 50000 hrs.

› Mid Flux	LED-Type 16	17 W
› High Flux	LED-Type 17	23 W
› Ultra Flux	LED-Type 18	33 W

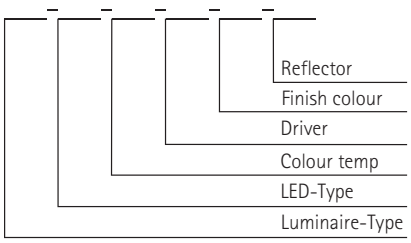


Luminous flux Retail (CRI 85/95)

		3100 K		
LED-Type	54	2830 lm	CRI > 95	35 W
LED-Type	44	3490 lm	CRI > 85	35 W

Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	16	1970 lm	2060 lm	2140 lm	2190 lm
LED-Type	17	2700 lm	2810 lm	2920 lm	3000 lm
LED-Type	18	3900 lm	4070 lm	4230 lm	4330 lm



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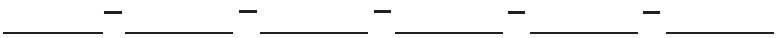
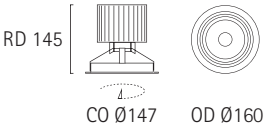




	LED-Type	Colour temp	Driver	Finish colour	Reflector
12280	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K	15 = DMX	32 = matt white	F = 37°
					XF = 60°

Technical changes reserved and errors excepted!

LED Swiveled luminaire

Convincing enhancement
The LED swiveled luminaire 28000 is the enhancement of the cardanic LED spotlight 12800. Identical as downlights, both luminaire create an even apparence when built in side by side. The swiveled luminaire 28000 convinces with its flexibility. Objects, that are close to the ceiling, can be illuminated by the 350° rotatable and 50° tiltable luminaire head of the 28000.

swiveled in

50% swiveled out

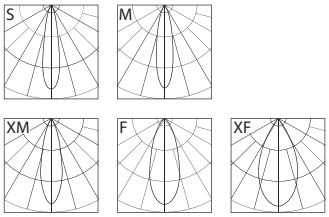
swiveled out

LED Swiveled luminaire

› Luminaire housing made of aluminium and steel
› Powder-coated surface
› Aluminium reflector (Al99.99), high polished
› With glare-reducing protective glass
› Reflector can be replaced without tools
› Passive cooling system

› 350° tiltable luminaire head, can be swivelled out to 50°
› LED COB-Array, L90/B10 - 50000 hrs.

› Mid Flux	LED-Type 16, 26	17 W
› High Flux	LED-Type 17, 27	23 W
› Ultra Flux	LED-Type 18, 28	33 W

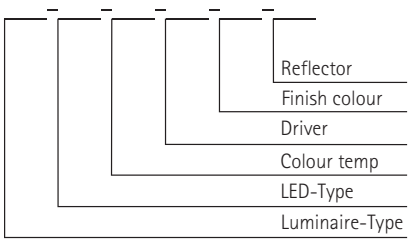


Luminous flux High Performance (CRI > 90)

		2700 K	3000 K	3500 K	4000 K
LED-Type	26	1710 lm	1750 lm	1850 lm	1870 lm
LED-Type	27	2330 lm	2390 lm	2540 lm	2550 lm
LED-Type	28	3370 lm	3460 lm	3670 lm	3690 lm

Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	16	1970 lm	2060 lm	2140 lm	2190 lm
LED-Type	17	2700 lm	2810 lm	2920 lm	3000 lm
LED-Type	18	3900 lm	4070 lm	4230 lm	4330 lm



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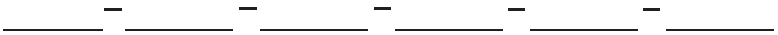
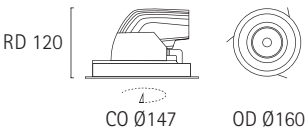




	LED-Type	Colour temp	Driver	Finish colour	Reflector
28000	16	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	17	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	18	35 = 3500 K	10 = DALI	30 = matt black	XM = 28°
	...	40 = 4000 K	15 = DMX	32 = matt white	F = 37°
					XF = 60°

Technical changes reserved and errors excepted!

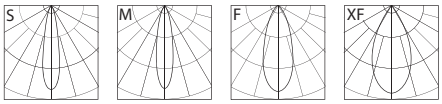
LED Tiltable luminaire

LED Tiltable luminaire

› Luminaire housing made of aluminium and steel
› Surface available powder-coated
› Aluminium reflector (Al99.99), high polished
› With glare-reducing protective glass
› Passive cooling system

› Luminaire unit tiltable; 2 X 20°
› LED COB-Array, L90/B10 - 50000 hrs.

› Small Flux LED-Type 11, 31 13 W
› Mid Flux LED-Type 12, 32 17 W

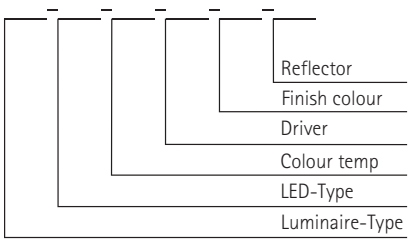


Luminous flux Gallery (CRI > 97)

		2700 K	3000 K
LED-Type	31	710 lm	770 lm
LED-Type	32	970 lm	1050 lm

Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	11	1080 lm	1130 lm	1170 lm	1200 lm
LED-Type	12	1480 lm	1450 lm	1600 lm	1640 lm



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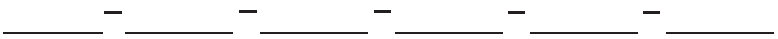
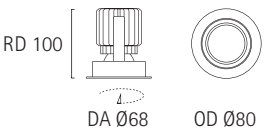




	LED-Type	Colour temp	Driver	Finish colour	Reflector
13050	11	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	12	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	...	35 = 3500 K	10 = DALI	30 = matt black	F = 37°
		40 = 4000 K		32 = matt white	XF = 55°

Technical changes reserved and errors excepted!

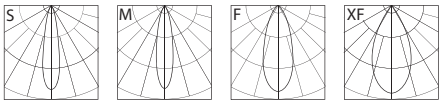
LED Recessed luminaire

LED Recessed luminaire

› Luminaire housing made of aluminium and steel
› Surface available powder-coated
› Aluminium reflector (Al99.99), high polished
› With glare-reducing protective glass
› Passive cooling system

› LED COB-Array, L90/B10 - 50000 hrs.

› Small Flux	LED-Type 11, 21	13 W
› Mid Flux	LED-Type 12, 22	17 W

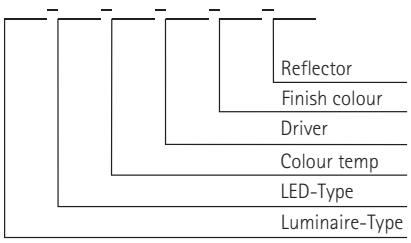


Luminous flux High Performance (CRI > 90)

		2700 K	3000 K	3500 K	4000 K
LED-Type	21	930 lm	960 lm	1020 lm	1020 lm
LED-Type	22	1280 lm	1310 lm	1390 lm	1400 lm

Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	11	1080 lm	1130 lm	1170 lm	1200 lm
LED-Type	12	1480 lm	1450 lm	1600 lm	1640 lm



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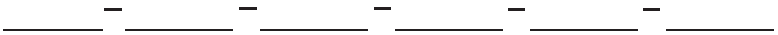
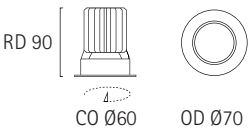




	LED-Type	Colour temp	Driver	Finish colour	Reflector
13000	11	27 = 2700 K	02 = ECG	20 = to RAL	S = 19°
	12	30 = 3000 K	03 = 1-10V	23 = Luna-silver	M = 23°
	...	35 = 3500 K	10 = DALI	30 = matt black	F = 37°
		40 = 4000 K		32 = matt white	XF = 55°

Technical changes reserved and errors excepted!

LED Recessed luminaire

Different covers
LED luminaires are generally delivered with glare-reducing protective glass. Well-integrated into the ceiling, because of de-glared luminaire heads. Partially frosted glass covers are available, beside the clear standard glass type 14. Glass type 18 with centered frosting and glass type 21 with frosted outer rim, are made for visualization of the luminaires as decorative elements.

Glass standard

Glass type 18

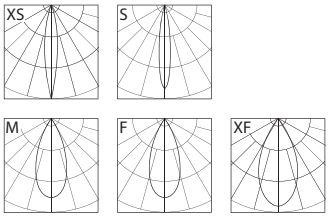
Glass type 21

LED Recessed luminaire

› Luminaire housing made of aluminium and steel
› Powder-coated surface
› Aluminium reflector (Al99.99), high polished
› With glare-reducing protective glass
› Passive cooling system

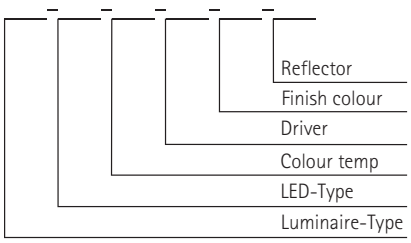
› LED COB-Array, L90/B10 - 50000 hrs.

› Small Flux	LED-Type 13	14 W
› Mid Flux	LED-Type 14	19 W
› High Flux	LED-Type 15	26 W



Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	13	1410 lm	1460 lm	1520 lm	1560 lm
LED-Type	14	1950 lm	2030 lm	2110 lm	2240 lm
LED-Type	15	2540 lm	2650 lm	2750 lm	2820 lm



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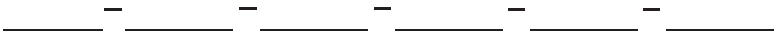
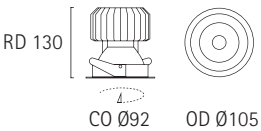


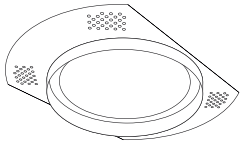


	LED-Type	Colour temp	Driver	Finish colour	Reflector
12420	13	27 = 2700 K	02 = ECG	20 = to RAL	XS = 12°
	14	30 = 3000 K	03 = 1-10V	23 = Luna-silver	S = 19°
	15	35 = 3500 K	10 = DALI	30 = matt black	M = 23°
	...	40 = 4000 K	15 = DMX	32 = matt white	F = 37°
					XF = 55°

12420	02	Glass type 18
12420	03	Glass type 21

Technical changes reserved and errors excepted!

LED Recessed luminaire



Round trimless downlights
Plastered-in installation using separate mounting frame. Options available for flush installation or recessed installation. The narrow, all-round reflector edge forms the visible border of the luminaire.

12440

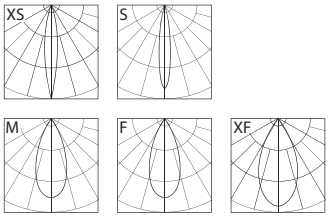
11310

LED Recessed luminaire

› Luminaire housing made of aluminium and steel
› Powder-coated surface
› Aluminium reflector (Al99.99), high polished
› With glare-reducing protective glass
› Passive cooling system

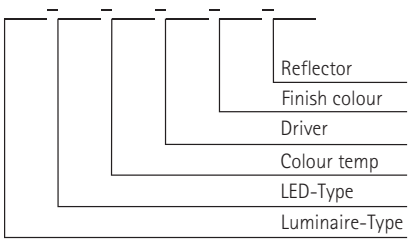
› LED COB-Array, L90/B10 - 50000 hrs.

› Small Flux	LED-Type 13	14 W
› Mid Flux	LED-Type 14	19 W
› High Flux	LED-Type 15	26 W



Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	13	1410 lm	1460 lm	1520 lm	1560 lm
LED-Type	14	1950 lm	2030 lm	2110 lm	2240 lm
LED-Type	15	2540 lm	2650 lm	2750 lm	2820 lm



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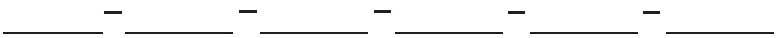
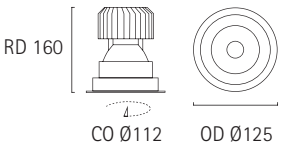
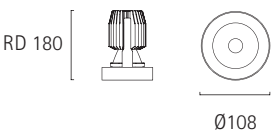






Trimless

	LED-Type	Colour temp	Driver	Finish colour	Reflector
12440	13	27 = 2700 K	02 = ECG	20 = to RAL	XS = 12°
	14	30 = 3000 K	03 = 1-10V	23 = Luna-silver	S = 19°
	15	35 = 3500 K	10 = DALI	30 = matt black	M = 23°
	...	40 = 4000 K		32 = matt white	F = 37°
					XF = 55°
11310	13	27 = 2700 K	02 = ECG	20 = to RAL	XS = 12°
	14	30 = 3000 K	03 = 1-10V	23 = Luna-silver	S = 19°
	15	35 = 3500 K	10 = DALI	30 = matt black	M = 23°
	...	40 = 4000 K		32 = matt white	F = 37°
					XF = 55°
11311	98	Plastering frame 1-flame			

Technical changes reserved and errors excepted!

LED Recessed luminaire

gold-colour anodised

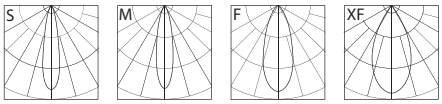
scotched and varnished

LED Recessed downlight

› Luminaire housing made of aluminium and steel
› Aluminium reflector (Al99.99), high polished
› Surface scotched and varnished or gold-colour anodised
› Surface also available powder-coated white or in accordance with RAL
› 1-part aluminium cover ring, conically milled
› Passive cooling system

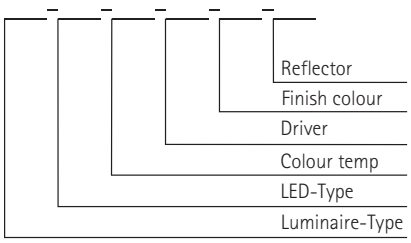
› LED COB-Array, L90/B10 - 50000 hrs.

› Small Flux	LED-Type 11	13 W	LED-Type 13	14 W
› Mid Flux	LED-Type 12	17 W	LED-Type 14	19 W
› High Flux	LED-Type 15	26 W		



Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	11	1080 lm	1130 lm	1170 lm	1200 lm
LED-Type	12	1480 lm	1450 lm	1600 lm	1640 lm
LED-Type	13	1410 lm	1460 lm	1520 lm	1560 lm
LED-Type	14	1950 lm	2030 lm	2110 lm	2240 lm
LED-Type	15	2540 lm	2650 lm	2750 lm	2820 lm



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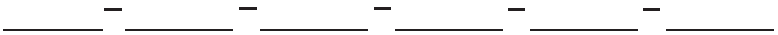
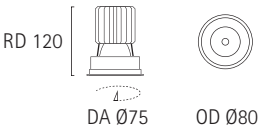
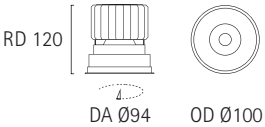




	LED-Type	Colour temp	Driver	Finish colour	Reflector
12920	11	27 = 2700 K	02 = ECG	13 = scotch al.	S = 19°
	12	30 = 3000 K	03 = 1-10V	15 = gold. anod.	M = 23°
	...	35 = 3500 K	10 = DALI	30 = matt black	F = 37
		40 = 4000 K		32 = matt white	XF = 55°



12940	13	27 = 2700 K	02 = ECG	13 = scotch al.	XS = 12°
	14	30 = 3000 K	03 = 1-10V	15 = gold. anod.	S = 19°
	15	35 = 3500 K	10 = DALI	30 = matt black	M = 23°
	...	40 = 4000 K	15 = DMX	32 = matt white	F = 37°
					XF = 55°

Lens optic
Exactly delineated light cone due to precisely calculated optical system. Luminaires are factory pre-assembled with the optics. When installed in closed ceiling systems, they have an IP rating of 43 from below.

gold-colour anodised

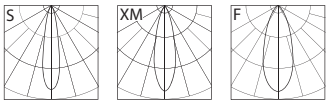
scotched and varnished

LED recessed downlight

› Luminaire housing made of aluminium and steel
› With lens optic for precisely delineated light cone
› Surface scotched and varnished or gold-colour anodised
› Surface also available powder-coated white or in accordance with RAL
› 1-part aluminium cover ring, conically milled
› Passive cooling system

› LED COB-Array, L90/B10 - 50000 hrs.

› Small Flux	LED-Type 13, 23	17 W
› Mid Flux	LED-Type 14, 24	23 W
› High Flux	LED-Type 15, 25	33 W

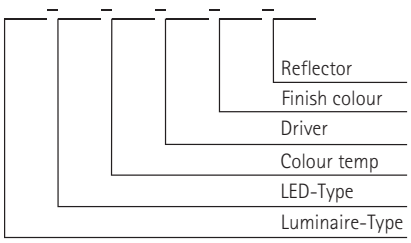


Luminous flux High Performance (CRI > 90)

		2700 K	3000 K	3500 K	4000 K
LED-Typ	23	1220 lm	1240 lm	1320 lm	1330 lm
LED-Typ	24	1690 lm	1730 lm	1820 lm	1840 lm
LED-Typ	25	2200 lm	2250 lm	2390 lm	2400 lm

Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Typ	13	1410 lm	1460 lm	1520 lm	1560 lm
LED-Typ	14	1950 lm	2030 lm	2110 lm	2240 lm
LED-Typ	15	2540 lm	2650 lm	2750 lm	2820 lm



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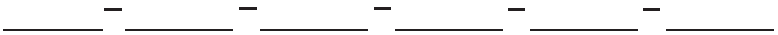
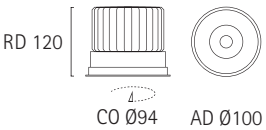




	LED-Type	Colour temp	Driver	Finish colour	Optics
12960	13	27 = 2700 K	02 = ECG	13 = scotch al.	S = 19°
	14	30 = 3000 K	03 = 1-10V	15 = gold. anod.	XM = 28°
	15	35 = 3500 K	10 = DALI	30 = matt black	F = 37°
	...	40 = 4000 K		32 = matt white	

Technical changes reserved and errors excepted!

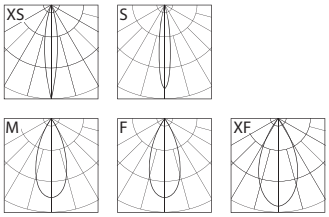
LED Recessed luminaire

LED Recessed luminaire

› Luminaire housing made of aluminium and steel
› Powder-coated surface
› Aluminium reflector (Al99.99), high polished
› With glare-reducing protective glass
› Available as single- or multi-luminaire
› Passive cooling system

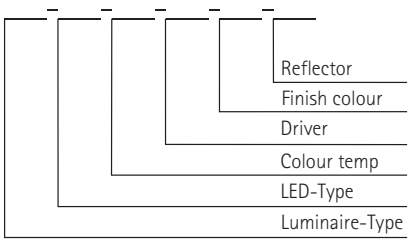
› LED COB-Array, L90/B10 - 50000 hrs.

› Small Flux	LED-Type 13	14 W
› Mid Flux	LED-Type 14	19 W
› High Flux	LED-Type 15	26 W



Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	13	1410 lm	1460 lm	1520 lm	1560 lm
LED-Type	14	1950 lm	2030 lm	2110 lm	2240 lm
LED-Type	15	2540 lm	2650 lm	2750 lm	2820 lm



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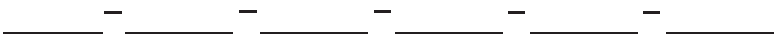
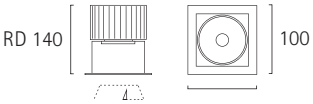
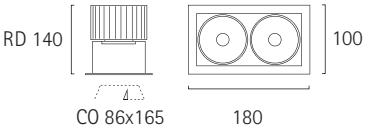






	LED-Type	Colour temp	Driver	Finish colour	Reflector
10940	13	27 = 2700 K	02 = ECG	20 = to RAL	XS = 12°
	14	30 = 3000 K	03 = 1-10V	23 = Luna-silver	S = 19°
	15	35 = 3500 K	10 = DALI	30 = matt black	M = 23°
	...	40 = 4000 K		32 = matt white	F = 37°
					XF = 55°
10942	13	27 = 2700 K	02 = ECG	20 = to RAL	XS = 12°
	14	30 = 3000 K	03 = 1-10V	23 = Luna-silver	S = 19°
	15	35 = 3500 K	10 = DALI	30 = matt black	M = 23°
	...	40 = 4000 K		32 = matt white	F = 37°
					XF = 55°

LED Wallwasher

Installation examples
The characteristic of a wall illuminated with several wallwashers can be significantly varied with the distance between individual luminaires and the distance between the luminaires and the wall.

10990

10980

Square LED Wallwasher

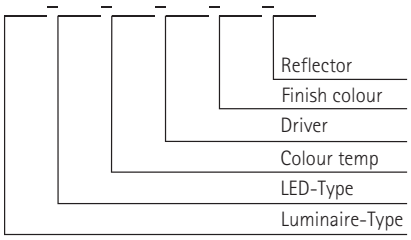
› Recessed housing made of sheet steel
› Filigree frame for mounting in plasterboard ceiling cut-outs
› Powder-coated surface
› Aluminium reflector (Al99.99), high polished
› Light distribution with flood characteristic

› LED COB-Array, L90/B10 - 50000 hrs.

› High Flux	LED-Type 17	23 W
› Ultra Flux	LED-Type 18	33 W

Luminous flux High Efficiency (CRI > 82)

		2700 K	3000 K	3500 K	4000 K
LED-Type	17	1750 lm	1800 lm	1870 lm	1900 lm
LED-Type	18	2400 lm	2500 lm	2590 lm	2640 lm



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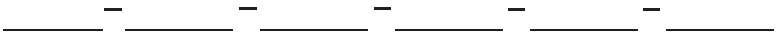
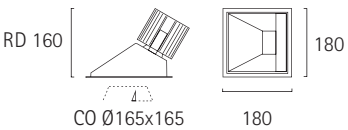
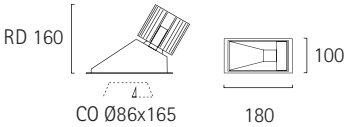






	LED-Type	Colour temp	Driver	Finish colour	Reflector
10990	17	27 = 2700 K	02 = ECG	20 = to RAL	asymm.
	18	30 = 3000 K	03 = 1-10V	23 = Luna-silver	
	...	35 = 3500 K	10 = DALI	30 = matt black	
		40 = 4000 K	15 = DMX	32 = matt white	
10980	17	27 = 2700 K	02 = ECG	20 = to RAL	asymm.
	18	30 = 3000 K	03 = 1-10V	23 = Luna-silver	
	...	35 = 3500 K	10 = DALI	30 = matt black	
		40 = 4000 K	15 = DMX	32 = matt white	

Round trimless downlights
Plastered-in installation using separate mounting frame. Options available for flush installation or recessed installation. To simplify the installation, the plastering frame is in several parts and can be adapted to suit the respective ceiling system and the specific installation situation (e.g. recess depth). The plastering frame is fixed in the ceiling cut-out that was produced on site and is secured using drywall screws. Fitting to the ceiling system is to be done by specialist fitters. The narrow, all-round reflector edge with joint forms the visible border of the luminaire.

12980

12970

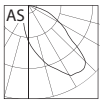
Plastering frame
For firm, concealed installation in ceiling cut-outs.

Round LED Wallwasher

› Recessed housing made of sheet steel
› Filigree frame for mounting in plasterboard ceiling cut-outs
› Powder-coated surface
› Aluminium reflector (Al99.99), high polished
› Soft, pleasant appearance with diffuser glass

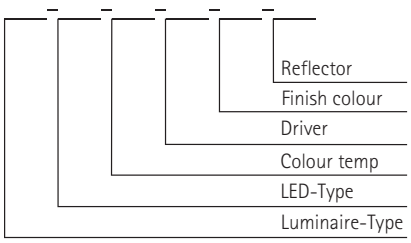
› LED COB-Array, L90/B10 - 50000 hrs.

› High Flux	LED-Type 17	23 W
› Ultra Flux	LED-Type 18	33 W

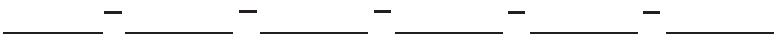


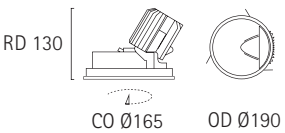
Luminous flux High Efficiency (CRI > 82)

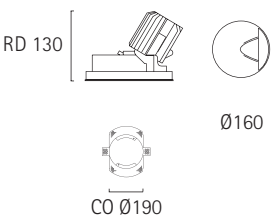
		2700 K	3000 K	3500 K	4000 K
LED-Type	17	1850 lm	1900 lm	1970 lm	2000 lm
LED-Type	18	2500 lm	2600 lm	2690 lm	2740 lm



article number configurator







Trimless

	LED-Type	Colour temp	Driver	Finish colour	Reflector
12980	17	27 = 2700 K	02 = ECG	20 = to RAL	asymm.
	18	30 = 3000 K	03 = 1-10V	23 = Luna-silver	
	...	35 = 3500 K	10 = DALI	30 = matt black	
		40 = 4000 K	15 = DMX	32 = matt white	
12970	17	27 = 2700 K	02 = ECG	20 = to RAL	asymm.
	18	30 = 3000 K	03 = 1-10V	23 = Luna-silver	
	...	35 = 3500 K	10 = DALI	30 = matt black	
		40 = 4000 K	15 = DMX	32 = matt white	
12971	98	plastering frame 1-flame			

Technical changes reserved and errors excepted!

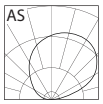
LED Light cove

LED Light cove

› Light cove with LED technology and wide light distribution
› Ready-to-connect in closed aluminium housing
› Reflector with asymmetric wide distribution
› Flat end plate for seamless rows
› Upper side with matt diffuser
› With separate power supply units, optionally dimmable / DALI

› LED COB-Array, L90/B10 - 50000 hrs.

› Small Flux LED-Type 03
› Mid Flux LED-Type 04
› High Flux LED-Type 05

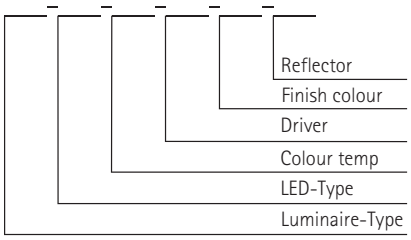


Luminous flux High Efficiency (CRI > 82) Small Flux

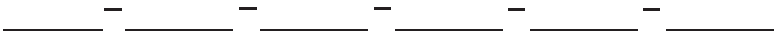
		2700 K	3000 K	4000 K	Efficiency
15102	03	1090 lm	1136 lm	1200 lm	14 W
15103	03	1635 lm	1704 lm	1800 lm	20 W
15104	03	2180 lm	2272 lm	2400 lm	25 W
15105	03	2726 lm	2840 lm	3000 lm	30 W
15106	03	3272 lm	3408 lm	3600 lm	35 W

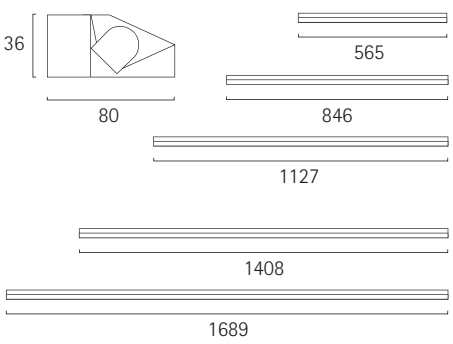
Luminous flux High Efficiency (CRI > 82) High Flux

		2700 K	3000 K	4000 K	Efficiency
15102	05	1970 lm	2051 lm	2167 lm	27 W
15103	05	2950 lm	3076 lm	3251 lm	39 W
15104	05	3938 lm	4102 lm	4334 lm	50 W
15105	05	4923 lm	5128 lm	5418 lm	62 W
15106	05	5907 lm	6153 lm	6501 lm	73 W



article number configurator





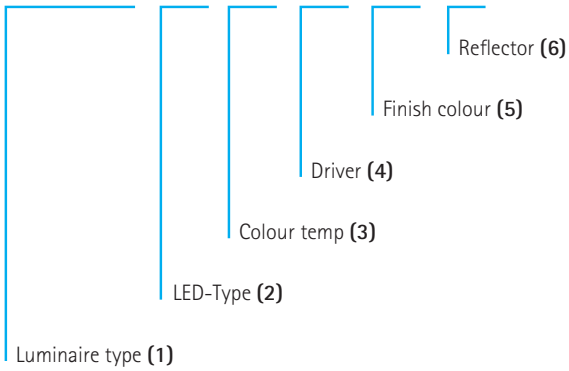
	LED-Type	Colour temp	Driver	Finish colour	Reflector
15102	03	27 = 2700 K	02 = ECG	14 = anod. al.	asymm.
	04	30 = 3000 K	03 = 1-10V	20 = to RAL	
15103	05	35 = 3500 K	10 = DALI		
	...	40 = 4000 K	15 = DMX		
15104					

15105	03	27 = 2700 K	02 = ECG	14 = anod. al.	asymm.
	04	30 = 3000 K	03 = 1-10V	20 = to RAL	
15106	05	35 = 3500 K	10 = DALI		
	...	40 = 4000 K	15 = DMX		

Key to Article Numbers

The article number fundamentally has six parts. The number starts with the desired luminaire type (1) and continues with the LED-Type (2), colour temp (3), driver (4), surface colour (5) and reflector (6).

12280-16-30-02-32-M



(2) LED-Type order code

0x	Linear
1x	High Efficiency (CRI > 82)
2x	High Performance (CRI > 90)
3x	Gallery (CRI > 97)
4x	Retail (CRI > 85)
5x	Retail (CRI > 95)
6x	Below Black Body (CRI > 90 BBL)

(3) Colour temp order code

27	2700 K
30	3000 K
31	3100 K
35	3500 K
40	4000 K
56	5600 K

(4) Driver order code

00	Without driver
01	Low-loss driver
02	Electronic driver
03	Dimmable ECG, 1-10 volt
04	2 x individual ECG
05	2 x dimmable ECG, 1-10 volt
06	Emergency light, E14
07	Single battery, 1 hour
08	Single battery, 3 hour
09	Mains/battery switch
10	Dimmable ECG, DALI
11	2x dimmable ECG, DALI
14	dimmable ECG phase
15	DMX

(5) Finish colour order code

10	Brass
11	Chrome
12	Matt chrome
13	Aluminium scotched & varnished
14	Anodized aluminium
18	Stainless steel, brushed
20	Made to RAL
23	Luna-silver
25	Titanium silver
26	To RAL 9006
27	To RAL 9007
30	Matt black
31	White
32	Matt white
66	Ceiling frame black + housing/light trap black
67	Ceiling frame titanium + housing/light trap black

(6) Reflector order code

XS	Super-Spot
S	Spot
M	Medium
XM	Medium wide
F	Flood
XF	Super-Flood

Overwiew of LED types

Retail (CRI 85/95)

LED-Type	Current feed	Watt	3100 K	
54	High Flux	35 W	2830 lm	CRI > 95
44	High Flux	35 W	3490 lm	CRI > 85

High Efficiency (CRI > 82)

LED-Type	Current feed	Watt	2700 K	3000 K	3500 K	4000 K
11	Small Flux	13 W	1080 lm	1130 lm	1170 lm	1200 lm
12	Mid Flux	17 W	1480 lm	1540 lm	1600 lm	1640 lm
13	Small Flux	14 W	1410 lm	1460 lm	1520 lm	1560 lm
14	Mid Flux	19 W	1950 lm	2030 lm	2110 lm	2240 lm
15	High Flux	26 W	2540 lm	2650 lm	2750 lm	2820 lm
16	Mid Flux	17 W	1970 lm	2060 lm	2140 lm	2190 lm
17	High Flux	23 W	2700 lm	2810 lm	2920 lm	3000 lm
18	Ultra Flux	33 W	3900 lm	4070 lm	4230 lm	4330 lm

High Performance (CRI > 90)

LED-Type	Current feed	Watt	2700 K	3000 K	3500 K	4000 K
21	Small Flux	13 W	930 lm	960 lm	1020 lm	1020 lm
22	Mid Flux	17 W	1280 lm	1310 lm	1390 lm	1400 lm
23	Small Flux	14 W	1220 lm	1240 lm	1320 lm	1330 lm
24	Mid Flux	19 W	1690 lm	1730 lm	1820 lm	1840 lm
25	High Flux	26 W	2200 lm	2250 lm	2390 lm	2400 lm
26	Mid Flux	17 W	1710 lm	1750 lm	1850 lm	1870 lm
27	High Flux	23 W	2330 lm	2390 lm	2540 lm	2550 lm
28	Ultra Flux	33 W	3370 lm	3460 lm	3670 lm	3690 lm

Gallery (CRI > 97)

LED-Type	Current feed	Watt	2700 K	3000 K	3500 K	4000 K
31	Small Flux	13 W	710 lm	770 lm	-	-
32	Mid Flux	17 W	970 lm	1050 lm	-	-
33	Small Flux	14 W	920 lm	1000 lm	-	-
34	Mid Flux	19 W	1280 lm	1380 lm	-	-
35	High Flux	26 W	1670 lm	1800 lm	-	-
36	Mid Flux	17 W	1300 lm	1400 lm	-	-
37	High Flux	23 W	1780 lm	1910 lm	-	-
38	Ultra Flux	33 W	2570 lm	2770 lm	-	-

Terms and Conditions

I.) General terms and conditions

1. All of our existing and future shipments and services, including secondary services such as consultancy and planning services prior to and after delivery, are based exclusively on these Terms and Conditions. The same shall apply to any adjustment services. These Terms and Conditions shall also apply to future business dealings irrespective of whether they are expressly mentioned or not.
2. The buyer's terms and conditions (also known as conditions for purchasing) are herewith expressly excluded. They are equally not binding even where we do not exclude them at the time of entering into a contract.
3. The conclusion of a purchase contract and the dimensions of the delivery obligations arising out of such a contract are governed by a corresponding declaration of intent by both contracting parties. Where such a declaration of intent is not available, a written order confirmation from the supplier shall be exclusively binding whereby the following terms and conditions shall be deemed agreed.

II.) Contractual Agreement

1. Written and oral offers and offers made by telephone are unbinding and subject to confirmation. Offers made do not oblige the supplier to accept an order.
2. Statements made by the supplier with regard to measurement and weight, as well as graphic representations, drawing and details of dimension and weight or similar provided by the supplier in documentation or descriptions are only approximate values and are therefore not binding. The documentation comprising the offer does not represent a guarantee of the product's properties but serves purely as orientation for the buyer.
3. A guarantee with regard to specific properties and/or the suitability of a product for a particular use shall only be binding where this is expressly stated as such in writing

III.) Price

1. The stated prices are ex works, including standard packaging. Changes with regard to despatch and packaging of goods require a separate agreement.
2. All prices include VAT at the rate applicable at the time of delivery. VAT will be added on to invoices at the applicable rate and will be shown separately. All other taxes, customs duty, charges or similar shall be borne by the buyer.3. Until an order is confirmed by the supplier, prices quoted for special lamps or special constructions shall be regarded as approximate prices. A „special lamp" shall be defined as the constructional modification of an existing lamp type and the making of same according to in-house drawings or those of the buyer. Spare parts and spare colours for special lamps must be ordered separately by the buyer and will be invoiced by the supplier.
4. Unless otherwise agreed samples will only be delivered on the basis of an invoice with the value calculated in line with the price list. Samples may not be exchanged or returned. The cost of sample special lamps shall be calculated on the basis of time and effort expended and invoiced accordingly.

IV.) Retention of Title

1. Until payment has been received in full, the supplied goods shall, even after sale, remain the property of the supplier. The supplier's right to retention of title extends to products which have already been installed or have been sold on.
2. Any right to payment arising out of the resale of the goods by the buyer shall be ceded to the supplier who expressly accepts this assignment.
3. Where goods of the supplier have already been installed, the value of the supplier's goods resulting from the sale of the product/project by the buyer shall be ceded by the buyer to the supplier at the moment such sale takes place. Proportional title to the proceeds of the re-sold goods shall be transferred to the supplier when the buyer receives payment. Unpaid goods from the supplier may be neither pledged nor assigned by way of collateral. All demands arising out of the commercial relationship shall be immediately due and payable at the moment payment ceases and/or if the buyer should seek for settlement in bankruptcy or a moratorium.

V.) Payment

1. The supplier's invoices are to be paid in full 14 days after the date shown on the invoice at latest. Part deliveries shall be invoiced separately. Where payment is received within 8 days from the date shown on the invoice, the supplier shall grant a cash discount of 2%. The date of payment shall be the date on which the money is available to the supplier. Where outstanding payments are owed from previous invoices, cash discounts shall not be given.
2. The buyer shall be deemed in each and every case, and without any reminder being necessary, to be in arrears when 14 days have elapsed from the date of the invoice. In the event of arrears, interest at the usual bank rates for overdrafts shall be charged. In the event of the buyer being in arrears, the supplier may immediately demand settlement, including settlement of all invoices which would normally be due and payable at a later date, any other agreements notwithstanding.
3. Payment may not be withheld or offset by the buyer against any counter claims he may make which have not been acknowledged by the supplier.
4. Irrespective of any individually agreed conditions of payment, the supplier shall be entitled to demand immediate settlement should the buyer find himself in circumstances which make it unlikely that he will meet the agreed conditions of payment. This shall apply where there are well-founded indications of a significant worsening of the buyer's financial position, in particular in the event of suspended payments, cheque or draft refusals or arrears, where it is clear from these that the supplier's claim to payment is endangered by the buyer's insufficient ability to pay. In these instances the supplier is further entitled to demand payment in instalments or to demand further security.

VI.) Delivery

1. The observance of delivery deadlines presupposes the punctual receipt of all specifications, documentation, licences and releases, in particular of plans and drawings, from the buyer as well as the buyer's observance of agreed conditions of payment and any other obligations. Where these obligations are not met punctually, any delivery deadlines shall be extended accordingly, unless the supplier cannot answer for any delay. Transactions with fixed delivery dates require express written confirmation from an authorised person.
2. The delivery dates stated by the supplier are approximate and depend

on the receipt of punctual and orderly delivery by his own suppliers. The supplier shall be liable for the observance of a delivery deadline only where he has expressly given such an undertaking. Where these obligations are not punctually met, the delivery deadline shall be extended accordingly without making the supplier liable to pay compensation.
3. The transport risk shall be borne by the buyer, even where carriage free delivery has been agreed, once the goods have left the supplier's place of production. At the request of the buyer and at his expense, the goods may be insured by the supplier against loss caused by despatch, breakage, transport or fire.

VII.) Receipt and fulfilment

1. Delivered goods must be accepted by the buyer even where they show minor defects such as do not interfere with the functioning of the product.
2. Part deliveries may be made.
3. The supplier's stated willingness to deliver the goods shall suffice as fulfilment of the delivery conditions.

VIII.) Guarantee and liability

1. Immediately on receipt of any delivery, the buyer shall inspect the shipment thoroughly and fully. Defects or malfunctions noted on inspection must be reported in writing within 8 days. Where a defect which was not visible immediately becomes apparent later, the buyer must notify the supplier of this without delay in writing.
2. The guarantee is for 12 months from the transfer of risk and applies to guaranteed properties and the flawlessness of the goods with regard to material and processing, in accordance with the latest state of technology. The only guarantee for any illuminants delivered shall be the guarantee of the respective illuminant manufacturer. Illuminants may not be exchanged or replaced.
3. The guarantee only applies if a defect appears despite proper and correct installation, operation, care, maintenance and normal use in keeping with any existing operation instructions and where the defect is not due to natural wear and tear, the corrosion of individual parts, improper repairs or alterations. The guarantee shall not apply in the event of minor discrepancies with regard to colour, dimensions and/or other external properties.
4. Where justified and properly reported complaints have been made, the supplier undertakes to either remove the defect or to exchange the faulty part within a suitable period of time, whichsoever he deems fit. The supplier shall not bear the cost of installation.
5. The buyer does not have the right to cancel the contract or to reduce the agreed price unless the supplier refuses to remove the defect or replace the goods or has not responded to a justified complaint within a suitable period of at least 4 weeks. The contract may only be cancelled if the buyer cannot be expected to accept the goods at a reduced price.
6. Claims, irrespective of their legal basis, will be entertained only in the case of §11, No. 7 AGBG (gross negligence), §11, No. 8(b) AGBG (default and impracticality, caused by our gross negligence), §11, No. 9 AGBG (buyer's loss of interest in the event of partial default and partial impracticality, but only where these are caused by the gross negligence of the supplier) and for grossly negligent claims with regard to the properties of the products. Moreover claims will be entertained which relate to so-called direct and/or consequential loss, where this was foreseeable by the supplier at the time the contract was concluded and he was aware of such at the time of giving any undertakings.

IX.) Place of delivery and jurisdiction

1. The place of delivery for all deliveries and payments including return deliveries shall be Dortmund.
2. The sole jurisdiction for all disputes arising directly or indirectly out of the contract shall be the place in which the supplier has his head office.
3. German law shall apply in relation to this contract, to the exclusion of the UN Convention on Contracts for the International Sale of Goods.

X.) Miscellaneous

1. The supplier reserves his right to use quotations, drawings and other documentation (hereinafter referred to as „documentation") as the owner and originator thereof. This documentation may only be transmitted to third parties with the prior approval of the supplier and, if no order is placed with the supplier, must be returned on demand without delay. Sentences 1 and 2 apply equally to the buyer's documentation: this may however be made available to third parties whom the supplier has rightfully commissioned to carry out deliveries.
2. Where one of the provisions of these terms and conditions or a provision in some other agreement is or shall become invalid, this does not affect the validity of the remaining provisions or agreements.

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Article number index












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GENERAL INFORMATION

All previous catalogues and the details given in them are rendered invalid by the appearance of this edition. For the duration of the validity of this catalogue, we expressly reserve the right to make technical and design changes to the products listed, and expressly indicate that errors are excepted. The illustrations and drawings shown in this catalogue are non-binding. Unless otherwise stated, all dimensions given are approximate dimensions in millimetres. Lamps are included in the scope of supply. All brand names are the property of their legal owners and are given for descriptive purposes only. The catalogue contains images taken with the approval of specific customers in existing projects as well as luminaire visualisations with pre-series status at the time of printing. Images from shutterstock.com and fotolia.com formed the basis for these simulations.

The high rate of innovation and rapid technological advancement in LED research means that we can only specify lumen values – if not separately noted – for the specifically used LEDs (at operating temperature). Informations in this catalog are current as of publication date.

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